CLAIMS

What is claimed is:

1. A disc centering device comprising:

a base plate;

a chuck which is installed on the base plate;

a hub unit which is detachably engaged to the chuck and receives discs to be stacked;

disc pushers which are slidably provided outside the hub unit and include corresponding plate springs which push circumferences of the discs and center the discs;

supporting units which support the corresponding plate springs with respect to the disc pushers so as to reinforce a restoring force of the plate springs; and

a driving unit which slides the disc pushers simultaneously.

2. The disc centering device according to claim 1, wherein each supporting unit is provided in a part of the corresponding plate spring.

3. The disc centering device according to claim 2, wherein each supporting unit is provided in a side end part of the corresponding plate spring.

4. The disc centering device according to claim 3, wherein each of the supporting units includes:

a supporting block which supports the side end part of the corresponding plate spring; and

at least one screw which fastens the corresponding plate spring to the supporting block.

5. The disc centering device according to claim 4, wherein the support block completely covers the side end part of the corresponding plate spring.

6. The disc centering device according to claim 1, wherein each of the plate springs comprises a plurality of layered plate spring members.

7. The disc centering device according to claim 1, wherein each of the supporting units supports a side end part of the corresponding plate spring with respect to the respective disc pusher so as to maintain a centering value of the discs within a desired level.

8. The disc centering device according to claim 7, wherein the centering value of the discs is maintained within a deviation of about 30 μm or less.

9. The disc centering device according to claim 8, wherein the centering value of the discs is maintained within the deviation of about 10 μm or less.

10. The disc centering device according to claim 1, wherein each of the supporting units supports a side end part of the corresponding plate spring so as to restore the plate spring after the disc centering and prevent a deformation of the discs.

11. The disc centering device according to claim 1, wherein the chuck includes a collet which grabs or relives the hub unit according to whether a compressed air is provided to the chuck.

12. The disc centering device according to claim 1, wherein the hub unit comprises:

a hub body which is detachably engaged to the chuck and receives the discs; and

a hub cap which moves up or down to clamp the discs stacked with resect to the hub body.

13. The disc centering device according to claim 12, wherein the hub cap moves up or down according to whether a compressed air is provided to the hub unit.

14. The disc centering device according to claim 1, wherein the disc pushers are provided in a radial direction relative to the hub unit.

15. The disc centering device according to claim 14, wherein the disc pushers include first, second and third disc pushers which are provided at intervals of 120 degrees with respect to the hub unit.

16. The disc centering device according to claim 1, wherein the driving unit includes:

a motor;

a belt pulley which is connected to the motor and the disc pushers; and

a link which is linearly moved by the belt pulley and simultaneously moves the disc pushers back or forth.

17. The disc centering device according to claim 1, wherein the driving unit includes cylindrical actuators which drive the corresponding disc pushers.

18. The disc centering device according to claim 1, wherein the plate springs simultaneously pressurize the circumferences of the discs having different diameters.

19. The disc centering device according to claim 1, further comprising a linear guide unit which mounts the disc pushers, wherein the linear guide unit slides the disc pushers according to the driving unit.

20. The disc centering device according to claim 1, wherein the supporting units support the plate springs so as to reinforce the restoring force after a disc centering of the discs.

21. The disc centering device according to claim 11, wherein the chuck further includes:

a chuck body which defines the chuck;

an air chamber which is provided in the chuck body;

an air port which supplies the compressed air to the air chamber; and

a piston which is provided in the chuck body and moves up or down according to whether the compressed air is provided to the air chamber, wherein the collet grabs or relieves the hub unit according to an up or down movement of the piston.

22. The disc centering device according to claim 12, wherein the hub unit further comprises:

an air chamber which is provided in the hub body to receive a compressed air; and

a piston which is provided in the hub body and moves up or down according to whether the compressed air is provided to the air chamber, wherein the hub cap is provided at an upper portion of the hub body, and pushes or releases the disc with respect to the hub body according to an up or down movement of the piston.

23. A disc centering device comprising:

a base plate;

a chuck which is installed on the base plate;

a hub unit which is detachably engaged to the chuck and receives discs to be stacked;

a disc centering unit having plate springs which are slidably provided outside the hub unit and simultaneously pressurize circumferences of the discs to center the discs, wherein the disc centering unit includes reinforcing units provided at respective side ends of the plate springs that provide for the same carrying capacity of the discs and restore the plate springs to an original state after a disc centering operation; and

a driving unit which drives the disc centering unit.

24. The disc centering device according to claim 23, wherein the reinforcing units are extended bars which support the plate springs, at the side ends thereof, with respect to the disc centering unit so as to restore the plate springs.